

CONDENSED GUIDE
FOR THE STANFORD REVISION
OF THE BINET-SIMON TESTS

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DIVISION OF SECONDARY EDUCATION
UNDER THE EDITORIAL DIRECTION
OF ALEXANDER INGLIS

ASSISTANT PROFESSOR OF EDUCATION
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By the same author

THE INTELLIGENCE OF SCHOOL CHILDREN

How Children differ in Ability, the Use of Mental Tests in School Grading, and the Proper Education of Exceptional Children.

THE MEASUREMENT OF INTELLIGENCE

An Explanation of and a Complete Guide for the Use of the Stanford Revision and Extension of the Binet-Simon Intelligence Scale.

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Eighteen Plates and one copy of the Record Booklet, being the Test Material needed in giving the Tests to Children.

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CONDENSED GUIDE

For the Stanford Revision of the Binet-Simon Intelligence Tests.

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For the Stanford Revision of the Binet-Simon Tests.
Put up for general use in packages of 25, each forming a complete filing record for one child.

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BOSTON NEW YORK CHICAGO

CONDENSED GUIDE
FOR
THE STANFORD REVISION
OF THE
BINET-SIMON INTELLIGENCE TESTS

BY

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PREFACE

SINCE the appearance of the Stanford Revision of the Binet-Simon Intelligence Scale I have been frequently urged to prepare a condensed guide which would make the application of the tests easier and more convenient. I have hesitated somewhat to act upon this suggestion because I have not wished to encourage the use of the scale without the supplementary directions and explanations which are set forth in the original text of the Stanford Revision.¹ The demand has become so insistent, however, that I have decided to heed it. I have been led to this decision largely by the fact that my revision is now so generally used by examiners who are sufficiently experienced to be trusted to follow the correct procedure without the necessity of constantly consulting the complete text. Those who are thoroughly familiar with the contents of the latter will find the *Condensed Guide* a convenient help. It is impossible, however, to warn the inexperienced examiner too emphatically against the dangers inherent in the routine application of mental tests without some knowledge of their derivation, meaning, and purpose. The necessary psychological background for the use of the Binet scale I have tried to supply in *The Measurement of Intelligence*, and in *The Intelligence of School Children* I have explained the practical uses of mental tests in the grading and classification of school children. It is only as a supplement to these books that the procedure of the Stanford Revision is here presented in abbreviated form.

For the further aid of the experienced examiner a condensed record blank has also been prepared. Although this is considerably cheaper than the original Record Booklet and in certain respects perhaps somewhat more convenient, it is not recommended as a satisfactory substitute except when used by thoroughly trained examiners. Beginners, at least, should continue to use the complete Record Booklet both because of the accuracy of procedure which it fosters and because of the advantages of having a complete verbatim record of the responses. Besides being indispensable for the analytical study of the child's mental processes, the complete record makes possible the correction of errors in scoring and permits interesting qualitative comparisons between earlier and later performances by the same subject. It is believed that only for the veteran examiner, and perhaps even then only in special cases, are these advantages outweighed by the lower cost of the abbreviated blank.

The labor of preparing this *Guide* was made considerably lighter than it would otherwise have been by the fact that a similar guide had been

¹ Lewis M. Terman: *The Measurement of Intelligence*. (Riverside Textbooks in Education.) Houghton Mifflin Company.

prepared in the Office of the Surgeon-General for use in the army. I am greatly indebted to Dr. J. W. Bridges and to Major H. C. Bingham for assistance in the preparation of the latter. Their careful work has saved me many hours and has doubtless made the *Condensed Guide* more accurate and serviceable than it could otherwise have been.

LEWIS M. TERMAN

Stanford University, March 31, 1920

GENERAL DIRECTIONS

GENERAL directions for the use of the Stanford Revision have been fully set forth in chapter VIII of *The Measurement of Intelligence*. As this guide is only a handbook of procedure for the tests themselves, I shall not here undertake either to summarize that chapter or to add to it. I trust it may safely be assumed that no responsible person will attempt to apply the tests who is not familiar with the book which explains them and presents the general considerations which should govern their use.

However, extended observation of the difficulties which students and teachers encounter in learning to use the Stanford Revision has taught me that there are certain injunctions which cannot easily be too often repeated. Among these the following "ten commandments" have been selected for reëmphasis here:

1. The subject's attention and coöperation must be secured. Thanks to the novelty and inherent interest of the tests, this is usually not difficult to do. But there are degrees of *rappor*t, and the examiner should not be satisfied with his efforts until the subject becomes wholly absorbed in the tasks set him by the tests. The importance of tactful encouragement and a kindly, genial manner cannot be too strongly emphasized, nor, on the other hand, the risk incurred in allowing a parent to witness the test. Hardly anything is more likely to spoil an examination than the presence of a critical or over-sympathetic parent. Sometimes the teacher's presence is hardly less objectionable.

2. The correct formulas should be thoroughly learned and strictly adhered to. Unless this is done the scale used is not the Stanford Revision, whatever else it may be. For the first fifty or hundred examinations the tests should be given directly from this guide. Little by little, as the procedure becomes memorized, the examiner should attempt to free himself of the necessity of reading the formulas, but for a long time it is necessary to check up one's procedure by frequent reference to the Guide if practice in error is to be avoided.

3. The examiner should early learn to withstand the temptation of wholesale coaxing and cross-questioning. To do so often robs the response of significance and is likely to interfere with the establishment of *rappor*t. A simple "What do you mean?" or, "Explain what you mean," is sufficient to clarify most answers which are not clear. At the same time the examiner should be on guard against mistaking exceptional timidity for inability to respond. Persuasive encouragement is frequently necessary, but this should not be allowed to degenerate into a chronic habit of coaxing.

4. The record should always be made as the test proceeds. Memory

should never be trusted. As a rule enough of each response should be recorded to enable one to score it at any time later. The great advantage of the Record Booklet is that it permits this. Only the most expert examiner should limit his record to pluses and minuses.

5. The examination should be thorough. It should include at least one year in which there is no failure and at least one year in which there is no success. When lack of time necessitates an abbreviation of the examination, this should be done by using only the starred tests rather than by shortening the range of the examination.

6. Success in alternative tests may not be substituted for failure in one of the regular tests. Ordinarily the alternatives should be omitted. They have been included in the scale chiefly as a convenience in case materials are lacking for any of the regular tests, or in case any of the latter should be deemed for some special reason unsuitable. The ball and field test, for example, is often rendered unsuitable by coaching, and one of the alternates should always be substituted for the vocabulary test in the case of subjects whose mother tongue is other than English. Other substitutions or omissions are necessary in the case of subjects who are illiterate.

7. Care should be taken to ascertain the correct age. This is often misstated both by young normal children and by defectives. The age should be recorded in years *and months*.

8. In ordinary calculation of the intelligence quotient without any mechanical aid (as slide rule, calculating chart, or table), both age and mental age should be reduced to months before dividing.

9. **To avoid the danger of large error it is absolutely essential that the adding of credits to secure mental age and the dividing of mental age by chronological age to secure the intelligence quotient be performed twice.**

10. Finally, in calculating the intelligence quotient of subjects who are more than sixteen years old, the chronological age should be counted as sixteen. It is possible, as certain army data suggest, that a lower age than sixteen should have been taken, but until the matter has been more thoroughly investigated by the use of unselected adult subjects the age sixteen will continue to be used in the Stanford Revision.

DIRECTIONS: THE TESTS¹

Year III

1. *Pointing to Parts of Body*

Say, "Show me your nose." "Put your finger on your nose." If two or three repetitions of instructions bring no response, say, "Is this (pointing to chin) your nose?" "No?" "Then where is your nose?" Same for eyes, mouth, and hair.

Credit if correct part is indicated (in any way) three times out of four.

2. *Naming Familiar Objects*

Show S., one at a time, key (not Yale), penny (not new), closed knife, watch, pencil. Say each time, "What is this?" or, "Tell me what this is."

Credit if three responses out of five are correct.

3. *Pictures—Enumeration*

Say, "Now I am going to show you a pretty picture." Show picture (a) and say, "Tell me what you see in this picture," or, "Look at the picture and tell me everything you can see in it." If no response, "Show me the ——" "That is fine: now tell me everything you see in the picture." If necessary ask, "And what else?" Same for pictures (b) and (c).

Credit if at least three objects in one picture are enumerated spontaneously, or if one picture is described or interpreted.

4. *Giving Sex*

If S. is a boy, "Are you a little boy or a little girl?" If S. is a girl, "Are you a little girl or a little boy?" If no response, "Are you a little girl?" (if a boy); or "Are you a little boy?" (if a girl). If answer is "No," say, "Well, what are you? Are you a little boy or a little girl?" (or vice versa).

5. *Giving Last Name*

Ask, "What is your name?" If answer is only first or last name, e.g., Walter, say, "Yes, but what is your other name? Walter what?" and if necessary, "Is your name Walter Smith?"

6. *Repeating Sentences*

"Can you say, 'nice kitty'?" "Now say, 'I have a little dog.'" If no response, repeat first sentence two or three times. Same procedure

¹ Detailed directions for administering Stanford-Binet Scale and for scoring are available in Terman's *The Measurement of Intelligence*. (Riverside Textbooks in Education.) Houghton Mifflin Company.

for (b) "The dog runs after the cat" and (c) "In summer the sun is hot," except that these may be given only once.

Credit if at least one sentence is given without error after a single reading.

Alt. Repeating Three Digits

Say, "Listen. Say, 4, 2. Now say, 6, 4, 1." Same for 3, 5, 2, and 8, 3, 7. May repeat (a), not others. Rate, a little faster than one digit per second.

Credit if one set out of the three is given correctly after a single reading.

Year IV

1. Comparison of Lines

Show card (IV 1) and say, "See these lines. Look closely and tell me which one is longer. Put your finger on the longest one." If no response, "Show me which line is the biggest." Show twice more (reversing card at second showing) and ask, "Which one is the longest here?" If only two out of three are correct, repeat the entire test.

Credit if three responses out of three, or five out of six, are correct.

2. Discrimination of Forms

Use the forms supplied with the package of Test Material. One of the two cards containing the forms is to be cut up, so that the forms may be placed one at a time on the other card at "X."

Place circle at "X" on card and say, "Show me one like this," at same time passing the finger around the circumference of the circle. If no response, "Do you see all of these things?" (running finger over the various forms). "And do you see this one?" (pointing to circle again). "Now, find me another one just like this." A first error should be corrected thus, "No, find one just like this" (again passing finger around the outline of form at "X"). Make no comment on any other errors, but pass on to the square, then the triangle, and the rest in any order. Commend successes.

Credit for 7 correct choices out of 10. The first error, if corrected, counts as correct.

3. Counting Four Pennies

Place four pennies in a horizontal row. Say, "See these pennies. Count them and tell me how many there are. Count them with your finger, this way" (pointing to the first one on the subject's left) — "One. Now, go ahead." If S. gives number without pointing, say, "No, count them with your finger, this way," starting him as before. Have S. count aloud.

Credit for correct count tallying with pointing.

4. Copying Square

Show S. the square and say, "You see that?" (pointing to square). "I want you to make one just like it. Make it right here" (showing

space on record blank). "Go ahead. I know you can do it nicely." Unless drawing is clearly satisfactory, repeat twice more, saying each time "Make it exactly like this," pointing to model. Pencil.

Credit if one drawing is satisfactory. Score liberally. (See scoring card.)

5. *Comprehension*

Be sure to get S.'s attention before asking question. Repeat if necessary. Allow 20 seconds for answer.

(a) "What must you do when you are sleepy?"

(b) "What ought you to do when you are cold?"

(c) "What ought you to do when you are hungry?"

Credit if two responses of the three are correct. (See *The Measurement of Intelligence*, p. 158.)

6. *Repeating Four Digits*

Say, "Listen. I am going to say over some numbers and after I am through, I want you to say them exactly as I do. Listen closely and get them just right." Give (a) 4, 7, 3, 9, then (b) 2, 8, 5, 4, and (c) 7, 2, 6, 1, if necessary. May repeat (a) until attempt is made, but not others. Rate, a little faster than one digit per second.

Credit if one set of the three is correctly repeated in order, after a single reading.

7. *Alt. Repeating Sentences*

Say, "Listen; say this, 'Where is kitty?'" "Now, say this, —," reading the first sentence in a natural voice, distinctly and with expression. May re-read the first sentence.

(a) "The boy's name is John. He is a very good boy."

(b) "When the train passes you will hear the whistle blow."

(c) "We are going to have a good time in the country."

Credit if at least one sentence is repeated correctly after a single reading.

Year V

1. *Comparison of Weights*

Place the 3 and 15 gram weights before S., 2 or 3 inches apart. Say, "You see these blocks. They look just alike, but one of them is heavy and one is light. Try them and tell me which one is heavier." Repeat instructions if necessary, saying, "Tell me which one is the heaviest." If S. merely points without lifting blocks, or picks up one at random, say, "No, that is not the way. You must take the blocks in your hands and try them, like this." (Illustrate.) Give second trial with position of weights reversed; third trial with weights in same position as first.

Credit if two of three comparisons are correct.

2. *Naming Colors*

Show card (V 2) and say, pointing to colors in the order, red, yellow, blue, green, "What is the name of that color?"

Credit if all colors are correctly named, without marked uncertainty.

3. *Æsthetic Comparison*

Show pairs of faces in order from top to bottom of card (V 3). Say, "Which of these two pictures is the prettiest?"

Credit if all *three* comparisons are made correctly.

4. *Definitions: Use or Better*

Say, "You have seen a chair. You know what a chair is. Tell me, what is a chair?" If necessary urge as follows: "I am sure you know what a chair is. You have seen a chair." "Now, tell me, what is a chair?" If S. rambles say, "Yes, but tell me; what is a chair?" Same for horse, fork, doll, pencil, table.

Credit if four words out of the six are defined in terms of use or better. (See *The Measurement of Intelligence*, p. 168.)

5. *Patience*

Use two cards, each 2 x 3 inches. Divide one of them diagonally into two triangles. Place the uncut card on the table with one of the longer sides toward S. Then lay the divided card thus $\triangle \nabla$, and say, "I want you to take these two pieces (touching the two triangles) and put them together so they will look exactly like this" (pointing to rectangle). If S. hesitates, repeat instructions with a little urging. If first attempt is a failure, replace pieces, saying, "No; put them together so they will look like this" (pointing to rectangle). Do not suggest further by face or word whether response is correct. If a piece is turned over, turn it back and don't count that trial. Give, if necessary, three trials of one minute each.

Credit if two of the three trials are successful.

6. *Three Commissions*

Take S. to center of room. Say, "Now, I want you to do something for me. Here's a key. I want you to put it on that chair over there; then I want you to shut (or open) that door, and then bring me the box which you see over there" (pointing in turn to the objects designated). "Do you understand? Be sure to get it right. First, put the key on the chair, then shut (or open) the door, then bring me the box (again pointing). Go ahead." Stress words *first* and *then*. Give no further aid.

Credit if the three commissions are executed in proper order.

Alt. Giving Age

Say, "How old are you?"

Year VI

1. *Right and Left*

Say, "Show me your right hand" (stress *right* and *hand*, etc., rather strongly and equally). Same for *left ear*, *right eye*. If there is one error, repeat whole test, using *left hand*, *right ear*, *left eye*. Avoid giving aid in any way.

Credit if three of three, or five of six responses are correct.

2. *Missing Parts*

Show card (VI 2) and say, "There is something wrong with this face. It is not all there. Part of it is left out. Look carefully and tell me what part of the face is not there." Same for (b) and (c). If S. gives irrelevant answer, say, "No; I am talking about the face. Look again and tell me what is left out of the face." If correct response does not follow, point to the place where eye should be and say, "See, the eye is gone." Then proceed to others, asking, "What is left out of this face?" For (d) say, "What is left out of this picture?" No help except on (a). Order is eyes, mouth, nose, arms.

Credit if correct response is made for three of four pictures.

3. *Counting Thirteen Pennies*

Place thirteen pennies in horizontal row. Say, "See these pennies. Count them and tell me how many there are. Count them with your finger, this way" (pointing to the first one on the subject's left) "One. Now, go ahead." If S. gives number without pointing, say, "No, count them with your finger, this way," starting him as before. Have S. count aloud. Second trial given if only minor mistake is made.

Credit if one correct count, tallying with the pointing, is made in first or second trials.

4. *Comprehension*

Say (a) "What's the thing to do if it is raining when you start to school?"

(b) "What's the thing to do if you find that your house is on fire?"

(c) "What's the thing to do if you are going some place and miss your train (car)?" May repeat a question, but do not change form.

Credit if two of three responses are correct. (See *The Measurement of Intelligence*, pp. 182-83.)

5. *Naming Four Coins*

Show in order nickel, penny, quarter, dime, asking, "What is that?" If answer is "money," say, "Yes, but what do you call that piece of money?"

Credit if three of four responses are correct.

6. *Repeating Sentences*

Say, "Now, listen. I am going to say something and after I am through I want you to say it over just as I do. Understand? Listen carefully and be sure to say exactly what I say." Repeat, "say exactly what I say," before reading each sentence. Do not re-read any sentence.

(a) "We are having a fine time. We found a little mouse in the trap."

(b) "Walter had a fine time on his vacation. He went fishing every day."

(c) "We will go out for a long walk. Please give me my pretty straw hat."

Credit if one sentence out of three is repeated without error, or two with not more than one error each.

Alt. Forenoon and Afternoon

If A.M., ask, "Is it morning or afternoon?" If P.M., "Is it afternoon or morning?"

Year VII

1. *Giving Numbers of Fingers*

Say, "How many fingers have you on one hand?" "How many on the other hand?" "How many on both hands together?" If S. begins to count, say, "No, don't count. Tell me without counting," and repeat question.

Credit if all three questions are answered correctly and promptly without counting (5, 5, 10 or 4, 4, 8).

2. *Pictures; Description*

Show card (a) and say, "What is this picture about?" "What is this a picture of?" May repeat question, but do not change it. Same for (b) and (c). Order, Dutch Home, Canoe, Post Office.

Credit if two of the three pictures are described or interpreted. (See *The Measurement of Intelligence*, pp. 191-92.)

3. *Repeating Five Digits*

Say, "Now, listen. I am going to say over some numbers and after I am through, I want you to say them exactly as I do. Listen closely and get them just right." Give (a) 3, 1, 7, 5, 9, and if necessary (b) 4, 2, 8, 3, 5, and (c), 9, 8, 1, 7, 6. Do not re-read any set. Avoid grouping.

Credit if one set of the three is given correctly.

4. *Tying Bow Knot*

Show S. a completed bow knot (shoestring tied around a pencil) and say: "You know what kind of a knot this is, don't you? It is a bow knot. I want you to take this other piece of string and tie the same kind of knot around my finger." Give S. string of same length and hold finger conveniently for S.

Credit if double bow (both ends folded in) is tied within one minute. The usual half knot as basis must not be omitted. Single bow, half credit.

5. *Giving Differences*

Say, "What is the difference between a fly and a butterfly?" If S. does not understand, say, "You know flies, do you not? You have seen flies? And you know the butterflies? Now, tell me the difference between a fly and a butterfly." Same for stone and egg, and wood and glass.

Credit if any real difference is given in two of three questions. (See *The Measurement of Intelligence*, pp. 200-01.)

6. Copying Diamond

Place diamond before S., and give pen, saying, "I want you to draw one exactly like this. Make it right here" (showing space on record blank). Give three trials if necessary, saying each time, "Make it exactly like this one." (Note that pen and ink must be used.)

Credit if two drawings are satisfactory. (See scoring card.)

Alt. 1. Naming Days of Week

Say, "You know the days of the week, do you not? Name the days of the week for me." If response is correct, check by asking, "What day comes before Tuesday?" "Before Thursday?" "Before Friday?"

Credit if correct response is given within 15 seconds, and if two of three checks are correct.

Alt. 2. Three Digits Backwards

Say, "Listen carefully. I am going to read some numbers again but this time I want you to say them backwards. For example, if I should say 5—1—4, you would say 4—1—5. Do you understand?" Then, "Ready, now; listen carefully, and be sure to say the numbers backwards." If S. gives digits forwards, repeat instructions. If necessary, give (b) and (c), repeating, "Ready, now; listen carefully, and be sure to say the numbers backwards." 2, 8, 3; 4, 2, 7; 9, 5, 8.

Credit if one set is repeated backwards without error.

Year VIII

1. Ball and Field

Present "round field" on record blank with gate facing S. and say, "Let us suppose that your baseball has been lost in this round field. You have no idea what part of the field it is in. You don't know what direction it came from, how it got there, nor with what force it came. All you know is that the ball is lost somewhere in the field. Now, take this pencil and mark out a path to show me how you would hunt for the ball so as to be sure not to miss it. Begin at the gate and show me what path you would take." If S. stops, say, "But suppose you have not found it yet, which direction would you go next?"

Credit in Year VIII for "inferior" plan (or better); in Years VIII and XII for "superior" plan. (See scoring card.)

2. Counting 20 to 1

Say, "You can count backwards, can you not? I want you to count backwards for me from 20 to 1. Go ahead." If S. counts 1—20 say, "No, I want you to count backwards from 20 to 1, like this: 20—19—18 and clear on down to 1. Now, go ahead." Have S. try, even if he says he cannot, but do not prompt.

Credit for counting from 20 to 1 within 40 seconds with not more than one error. Spontaneous corrections allowed.

3. *Comprehension*

Say, "What's the thing for you to do:

(a) "When you have broken something which belongs to some one else?"

(b) "When you are on your way to school and notice that you are in danger of being late?"

(c) "If a playmate hits you without meaning to do it?"

Questions may be repeated once or twice, but form must not be changed.

Credit if two of three responses are correct. (See *The Measurement of Intelligence*, p. 216.)

4. *Finding Likenesses: Two Things*

Say, "I am going to name two things which are alike in some way, and I want you to tell me *how* they are alike.

(a) "Wood and coal: in what way are they alike?" If difference is given, say, "No, I want you to tell me how they are *alike*. In what way are wood and coal *alike*?"

(b) "In what way are an apple and a peach alike?"

(c) "In what way are iron and silver alike?"

(d) "In what way are a ship and an automobile alike?"

Credit if any real likeness is given for two of the four pairs. (See *The Measurement of Intelligence*, pp. 219-20.)

5. *Definitions: Superior to Use*

Ask, "What is a balloon?" Same for tiger, football, soldier. Do not comment on responses. May repeat questions.

Credit if two of four definitions better than use are given. (See *The Measurement of Intelligence*, pp. 222-23.)

6. *Vocabulary*

See page 31.

If both lists of words are given, credit if 20 definitions are satisfactory; if only one list is given, the requirement is 10.

Alt. 1. Naming Six Coins

Show nickel, penny, quarter, dime, silver dollar, and half-dollar in order, asking, "What is that?" If answer is "money," say, "Yes, but what do you call that piece of money?"

Credit if all six coins are correctly named. Spontaneous corrections allowed.

Alt. 2. Writing from Dictation

Give pen, ink, and paper, and say, "I want you to write something for me as nicely as you can. Write these words: 'See the little boy.' Be sure to write it all: 'See the little boy.'" Do not dictate the words separately, nor give further repetition.

Credit if sentence is written without omission of a word and legibly enough to be easily recognized. Misspelling disregarded if word is easily recognizable. (See scoring card.)

Year IX

1. *Giving the Date*

Ask in order, (a) "What day of the week is to-day?" (b) "What month is it?" (c) "What day of the month is it?" (d) "What year is it?" If S. gives day of month for day of week, or *vice versa*, repeat question with suitable emphasis. No other help.

Credit if there is no error greater than three days in (c) and no error in (a), (b), and (d). Spontaneous correction allowed.

2. *Arranging Five Weights*

Place 3, 6, 9, 12, and 15 gram weights before S. and say, "See these blocks. They all look alike, don't they? But they are not alike. Some of them are heavy, some are not quite so heavy, and some are still lighter. No two weigh the same. Now, I want you to find the heaviest one and place it here. Then find the one that is just a little lighter and put it here. Then put the next lighter one here, and the next lighter one here, and the lightest of all at this end (pointing). Ready; go ahead." Give second and, if necessary, third trial, repeating instructions only if S. has used an absurd procedure. Do not show S. the correct method.

Credit for correct arrangement in two of three trials.

3. *Making Change*

Ask, "If I were to buy 4 cents' worth of candy and should give the storekeeper 10 cents, how much money would I get back?" Similarly for 12-15 cents; and 4-25 cents. S. is not allowed coins or pencil and paper. If S. forgets problem, repeat once, but not more. Spontaneous corrections allowed.

Credit if two answers of three are correct.

4. *Four Digits Backwards*

Say, "Listen carefully. I am going to read some numbers, and I want you to say them backwards. For example, if I should say 5-1-4, you would say 4-1-5. Do you understand?" Then, "Ready now; listen carefully, and be sure to say the numbers backwards." If S. gives digits forwards, repeat instructions. If necessary, give (b) and (c), repeating each time, "Ready now; listen carefully, and be sure to say the numbers backwards." 6, 5, 2, 8; 4, 9, 3, 7; 8, 6, 2, 9.

Credit if one set is repeated backwards without error.

5. *Three Words in One Sentence*

Say, "You know what a sentence is, of course. A sentence is made up of some words which say something. Now, I am going to give you three words, and you must make up a sentence that has all three words

in it. The three words are 'boy,' 'river,' 'ball.' Go ahead and make up a sentence that has all three words in it." Repeat instructions if necessary, but do not illustrate. May say, "The three words must be put with some other words so that all of them together will make a sentence." Give only one trial, and do not caution against making more than one sentence. Do not hurry S., but allow only one minute. Then say, "Now make a sentence that has in it the three words 'work,' 'money,' 'men.'" If necessary give (c) desert, rivers, lakes, in the same way.

Credit if satisfactory sentence is given in two of three trials. (See *The Measurement of Intelligence*, pp. 243-45.)

6. *Finding Rhymes*

Say, "You know what a rhyme is, of course. A rhyme is a word that sounds like another word. Two words rhyme if they end in the same sound. For example, 'hat,' 'cat,' 'rat,' 'bat,' all rhyme with one another. Now, I am going to give you one minute to find as many words as you can that rhyme with 'day.' Ready; go ahead." If S. fails, repeat explanation, and give sample rhymes for day, as say, may, pay, hay. Otherwise, proceed, "Now, you have another minute to name all the words you can think of that rhyme with 'mill.'" Same, if necessary, for spring. Do not repeat explanation after "mill" or "spring."

Credit if three rhymes in one minute are given for each of two out of three words.

Alt. 1. Naming the Months

Say, "Name all the months of the year." If correct, check by asking, "What month comes before April?" "Before July?" "Before November?"

Credit if months are correctly named within 15 seconds with not more than one error, and if two of three checks are correct.

Alt. 2. Counting Value of Stamps

Say, "You know, of course, how much a stamp like this costs (pointing to a 1-cent stamp). And you know how much one like this costs (pointing to a 2-cent stamp). Now, how much money would it take to buy all these stamps?" (showing three 1-cent stamps and three 2-cent stamps). Do not tell values, where not known; if values are known but sum is wrongly given, give second trial, saying, "Tell me how you got it."

Credit if correct value is given in not over 15 seconds.

Year X

1. *Vocabulary* ~

See page 31.

If both lists are given, 30 satisfactory definitions are required; if only one list is given, the requirement is 10.

2. Absurdities

"I am going to read a sentence which has something foolish in it, some nonsense. Listen carefully and tell me what is foolish about it." After reading say, "What is foolish about that?" Give sentences twice if necessary, repeating exactly. If response is ambiguous, ask S. what he means.

(a) A man said: "I know a road from my house to the city which is down hill all the way to the city and down hill all the way back home."

(b) An engineer said that the more cars he had on his train the faster he could go.

(c) Yesterday the police found the body of a girl cut into 18 pieces. They believe that she killed herself.

(d) There was a railroad accident yesterday, but it was not very serious. Only 48 people were killed.

(e) A bicycle rider, being thrown from his bicycle in an accident, struck his head against a stone and was instantly killed. They picked him up and carried him to the hospital, and they do not think he will get well again.

Credit if four responses out of five are satisfactory. (See *The Measurement of Intelligence*, pp. 256-58.)

3. Drawing Designs from Memory

Give S. pencil and paper, then say, "This card has two drawings on it. I am going to show them to you for ten seconds, then I will take the card away and let you draw from memory what you have seen. Look at both drawings carefully and remember that you have only ten seconds." Show card X³ for 10 seconds, right side up. Have S. reproduce designs immediately, and note on his paper which is the top of his drawing.

Credit if one design is reproduced correctly and one at least half correctly. (See scoring cards.)

4. Reading and Report

New York, September 5th. A fire last night burned three houses near the center of the city. It took some time to put it out. The loss was fifty thousand dollars, and seventeen families lost their homes. In saving a girl who was asleep in bed, a fireman was burned on the hands.

Show selection and say, "I want you to read this for me as well as you can." Pronounce for S. all words he cannot make out, allowing not over 5 seconds' hesitation. (Record reading time and errors.) When S. has finished, say, "Very well done. Now, tell me what you read. Begin at the first and tell everything you can remember." When S. stops, ask, "And what else?"

Credit if selection is read within 35 seconds with not more than two errors, and if report given contains at least eight "memories" as separated above. Minor changes in wording allowed. Scoring is done by checking word groups on record blank.

5. *Comprehension*

Ask in order,

(a) "What ought you to say when someone asks your opinion about a person you don't know very well?"

(b) "What ought you to do before undertaking (beginning) something very important?"

(c) "Why should we judge a person more by his actions than by his words?"

May repeat but not change question except to substitute beginning in (b) in case undertaking seems not to be understood.

Credit if two of three replies are satisfactory. (See *The Measurement of Intelligence*, pp. 269-71.)

6. *Naming Sixty Words*

Say, "Now, I want to see how many different words you can name in 3 minutes. When I say ready, you must begin and name the words as fast as you can, and I will count them. Do you understand? Be sure to do your very best, and remember that just any words will do, like 'clouds,' 'dog,' 'chair,' 'happy'—ready; go ahead." Whenever there is a pause of 15 seconds, say, "Go ahead as fast as you can. Any words will do." Don't allow sentences or counting; if attempted, interrupt with "Counting (or sentences) not allowed. You must name separate words. Go ahead."

Credit if 60 words, exclusive of repetitions, are given in three minutes. If time is limited one minute may be given and 28 words required.

Alt. 1. Repeating Six Digits

"Now, listen. I am going to say over some numbers and after I am through I want you to say them exactly as I do. Listen closely and get them just right." Give (a) and if necessary (b). 3, 7, 4, 8, 5, 9; 5, 2, 1, 7, 4, 6.

Credit if one set is given without error.

Alt. 2. Repeating Sentences

Say, "Now listen. I am going to say something and after I am through I want you to say it over just as I do. Understand? Listen carefully and be sure to say exactly what I say." Repeat, "Say exactly what I say," before reading each sentence. Do not re-read any sentence.

(a) The apple tree makes a cool pleasant shade on the ground where the children are playing.

(b) It is nearly half-past one o'clock; the house is very quiet and the cat has gone to sleep.

(c) In summer the days are very warm and fine; in winter it snows and I am cold.

Credit if one sentence out of three is repeated without error, or two with not more than one error each.

Alt. 3. Healy-Fernald Puzzle

Place frame (short side toward S.) and blocks on table and say, "I want you to put these blocks in this frame so that all the space will be filled up. If you do it rightly, they will all fit in and there will be no space left over. Go ahead." Do not suggest hurrying. Note procedure, especially tendencies to repeat absurd moves, and moves which leave spaces obviously impossible to fill.

Credit if S. fits blocks into place three times within a total time of five minutes for the three trials.

Year XII

1. Vocabulary

See page 31.

40 satisfactory definitions if both lists are given; 20 if only one list is given.

2. Definitions: Abstract Words

Say, "What is pity?" "What do we mean by pity?" etc. If response contains word to be defined, ask, "Yes, but what does it mean to pity some one?" Same for revenge, charity, envy, justice. Question S. if response is not clear.

Credit if three of the five words are satisfactorily defined. (See *The Measurement of Intelligence*, pp. 282-84.)

3. Ball and Field

Present "round field" on record blank with gate facing S. and say, "Let us suppose that your baseball has been lost in this round field. You have no idea what part of the field it is in. You don't know what direction it came from, how it got there, nor with what force it came. All you know is that the ball is lost somewhere in the field. Now, take this pencil and mark out a path to show me how you would hunt for the ball so as to be sure not to miss it. Begin at the gate and show me what path you would take." If S. stops, say, "But suppose you have not found it yet, which direction would you go next?"

Credit in Year VIII for "inferior" plan (or better); in Years VIII and XII for "superior" plan. (See scoring card.)

4. Dissected Sentences

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Point to the first group of words (For the, etc.), and say, "Here is a sentence that has the words all mixed up, so that they don't make any sense. If the words were changed around in the right order they would make a good sentence. Look carefully and see if you can tell me how the sentence ought to read." Do not hurry S., but allow only one minute. If S. fails on the first sentence, read it for him slowly and correctly, pointing at each word as you speak it. Same procedure for second and third, except that no help is given.

Credit if two sentences of three are correct, or one correct and two nearly correct. Time, one minute each. (See *The Measurement of Intelligence*, p. 288.)

5. Interpretation of Fables

Present fables in order given below. Say, "You know what a fable is? Fables, you know, are little stories which teach us a lesson. I am going to read a fable to you. Listen carefully, and when I am through I will ask you to tell me what lesson the fable teaches us." After reading, say, "What lesson does that teach us?" Question S. if response is not clear. Proceed with (b), (c), (d), and (e) thus: "Here is another. Listen again and tell me what lesson this fable teaches us." After each ask, "What lesson does that teach us?"

(a) Hercules and the wagoner

A man was driving along a country road, when the wheels suddenly sank in a deep rut. The man did nothing but look at the wagon and call loudly to Hercules to come and help him. Hercules came up, looked at the man, and said: "Put your shoulder to the wheel, my man, and whip up your oxen." Then he went away and left the driver.

(b) The milkmaid and her plans

A milkmaid was carrying her pail of milk on her head, and was thinking to herself thus: "The money for this milk will buy 4 hens; the hens

will lay at least 100 eggs; the eggs will produce at least 75 chicks; and with the money which the chicks will bring I can buy a new dress to wear instead of the ragged one I have on." At this moment she looked down at herself, trying to think how she would look in her new dress; but as she did so the pail of milk slipped from her head and dashed upon the ground. Thus all her imaginary schemes perished in a moment.

(c) The fox and the crow

A crow, having stolen a bit of meat, perched in a tree and held it in her beak. A fox, seeing her, wished to secure the meat, and spoke to the crow thus: "How handsome you are! And I have heard that the beauty of your voice is equal to that of your form and feathers. Will you not sing for me, so that I may judge whether this is true?" The crow was so pleased that she opened her mouth to sing and dropped the meat, which the fox immediately ate.

(d) The farmer and the stork

A farmer set some traps to catch cranes which had been eating his seed. With them he caught a stork. The stork, which had not really been stealing, begged the farmer to spare his life, saying that he was a bird of excellent character, that he was not at all like the cranes, and that the farmer should have pity on him. But the farmer said: "I have caught you with these robbers, the cranes, and you have got to die with them."

(e) The miller, his son, and the donkey

A miller and his son were driving their donkey to a neighboring town to sell him. They had not gone far when a child saw them and cried out: "What fools those fellows are to be trudging along on foot when one of them might be riding." The old man, hearing this, made his son get on the donkey, while he himself walked. Soon they came upon some men. "Look," said one of them, "see that lazy boy riding while his old father has to walk." On hearing this the miller made his son get off, and he climbed upon the donkey himself. Farther on they met a company of women, who shouted out: "Why, you lazy old fellow, to ride along so comfortably while your poor boy there can hardly keep pace by the side of you!" And so the good-natured miller took his boy up behind him and both of them rode. As they came to the town a citizen said to them, "Why, you cruel fellows! You two are better able to carry the poor little donkey than he is to carry you." "Very well," said the miller, "we will try." So both of them jumped to the ground, got some ropes, tied the donkey's legs to a pole and tried to carry him. But as they crossed the bridge the donkey became frightened, kicked loose, and fell into the stream.

Credit in Year XII if score is 4 points or more; in Year XVI if score is 8 points or more. Allow 2 points for each fable for correct, and 1 for partially correct response. (Note carefully scoring directions in *The Measurement of Intelligence*, pp. 290-97.)

6. Five Digits Backwards

"Listen carefully; I am going to read some numbers, and I want you to say them backwards. For example, if I should say 5—1—4, you would say 4—1—5. Do you understand?" Then, "Ready now; listen carefully, and be sure to say the numbers backwards." If S. gives digits forwards, repeat instructions. If necessary, give (b) and (c), repeating each time, "Ready now; listen carefully, and be sure to say the numbers backwards." 3, 1, 8, 7, 9; 6, 9, 4, 8, 2; 5, 2, 9, 6, 1.

Credit if one set is repeated backwards without error.

7. Pictures; Interpretation

Show in succession Dutch Home, River Scene, Post Office, and Colonial House, saying each time, "Tell me what this picture is about. Explain this picture." May prompt with, "Go ahead," or "Explain what you mean."

Credit if three of the four pictures are satisfactorily interpreted. (See *The Measurement of Intelligence*, pp. 303-04.)

8. Finding Likenesses; Three Things

Say, "I am going to name three things which are alike in some way, and I want you to tell me *how* they are alike. Snake, cow, and sparrow; in what way are they alike?" May repeat or urge with, "I'm sure you can tell me how a snake, a cow, and a sparrow are alike," but do not change form of question. If difference is given, say, "No, I want you to tell me how they are *alike*. In what way are a snake, a cow, and a sparrow alike?" Same for (b) book, teacher, newspaper; (c) wool, cotton, leather; (d) knife-blade, penny, piece of wire; (e) rose, potato, tree.

Credit if any real similarity is given in three out of five trials. (See *The Measurement of Intelligence*, pp. 307-08.)

Year XIV

1. Vocabulary

See page 31.

50 satisfactory definitions if both lists are given; 25 if only one list is given.

2. Induction Test

(If XVIII² is to be given, it should precede this test.) Provide six sheets of tissue paper, 8½ by 11 inches. Take the first sheet, and telling S. to watch what you do, fold it once, and in the middle of the folded edge cut out a small notch; then ask S. to tell you how many holes there will be in the paper when it is unfolded. Whatever the answer, unfold the paper and hold it up broadside for S.'s inspection. Next, take another sheet, fold it once as before and say, "Now, when we folded it this way and cut out a piece, you remember it made one hole in the paper. This time we will give the paper another fold and see how many holes we

shall have." Then proceed to fold the paper again, this time in the other direction, cut out a piece from the folded side, and ask **how many holes there will be when the paper is unfolded.** Then unfold the paper, hold it up before S. so as to let him see the result. Whatever the answer, proceed with the third sheet. Fold it once and say, "**When we folded it this way there was one hole.**" Fold it again and say, "**And when we folded it this way there were two holes.**" Fold the paper a third time and say, "**Now, I am folding it again. How many holes will it have this time when I unfold it?**" Again unfold paper while S. looks on. Continue in the same manner with sheets four, five, and six, adding one fold each time. In folding each sheet recapitulate results, saying (with the sixth, for example): "**When we folded it this way there was one hole; when we folded it again there were two; when we folded it again there were four; when we folded it again there were eight; when we folded it again there were sixteen; now tell me how many holes there will be if we fold it once more.**" Avoid saying, "When we folded it once, twice, three times." After sixth response, ask, "**Can you tell me a rule by which I could know each time how many holes there are going to be?**"

Credit if answer to sixth question is correct, and governing rule is correctly stated.

3. *President and King*

Say, "**There are three main differences between a president and a king; what are they?**" If S. stops after one difference is given, urge him on, if possible, until three are given.

Credit if two of the three correct answers are given.

4. *Problem Questions*

Say, "**Listen, and see if you can understand what I read.**" Then read the problem slowly and with expression. If necessary, re-read problem.

(a) **A man who was walking in the woods near a city stopped suddenly very much frightened, and then ran to the nearest policeman, saying that he had just seen hanging from the limb of a tree a —— a what?**

If response is not clear, say, "**Explain what you mean.**"

(b) **My neighbor has been having queer visitors. First, a doctor came to his house, then a lawyer, then a minister (preacher or priest). What do you think happened there?**

If response is simply "a death," etc., check up by asking what the lawyer came for.

(c) **An Indian who had come to town for the first time in his life saw a white man riding along the street. As the white man rode by, the Indian said: "The white man is lazy; he walks sitting down." What was the white man riding on that caused the Indian to say, "He walks sitting down?"**

Credit if two of the three problems are satisfactorily answered. Spontaneous corrections allowed. (See *The Measurement of Intelligence*, pp. 316-18, for important scoring directions.)

5. *Arithmetical Reasoning*

If a man's salary is \$20 a week and he spends \$14 a week, how long will it take him to save \$300?
If 2 pencils cost 5 cents, how many pencils can you buy for 50 cents?
At 15 cents a yard, how much will 7 feet of cloth cost?

Show S. the problems one at a time. Have S. read each problem aloud and, with the printed problem still before him, find the answer without the use of pencil or paper. In the case of illiterates, examiner reads each problem for S. two or three times.

Credit if two of the three problems are correctly solved, within one minute each, not including time spent in reading.

6. *Reversing Hands of Clock*

Say, "Suppose it is six-twenty-two o'clock, that is, twenty-two minutes after six; can you see in your mind where the large hand would be, and where the small hand would be?" "Now, suppose the two hands of the clock were to trade places, so that the large hand takes the place where the small hand was, and the small hand takes the place where the large hand was, what time would it then be?" Repeat the test with the hands at 8.08 (8 minutes after 8),¹ and again with the hands at 2.46 (14 minutes before 3).

Credit if two of the three problems are solved with error of no more than 3 or 4 minutes.

Alt. Repeating Seven Digits

"Now listen. I am going to say over some numbers and after I am through, I want you to say them exactly as I do. Listen closely and get them just right." Give (a) and if necessary (b). 2, 1, 8, 3, 4, 3, 9; 9, 7, 2, 8, 4, 7, 5.

Credit if one set is reproduced without error.

Year XVI

1. *Vocabulary*

See page 31.

65 satisfactory definitions if both lists are given; 33 if only one list is given.

¹ 8.08 is substituted instead of 8.10, formerly used, because it is capable of more accurate solution and is less confusing.

2. Interpretation of Fables

See page 22 for procedure.

Allow 2 points for each fable correctly interpreted, and 1 if response is somewhat inferior to the standard. Credit in XII if score is 4 points or more; in XVI if score is 8 points or more. (Note carefully scoring in *The Measurement of Intelligence*, pp. 290-97.)

3. Differences Between Abstract Terms

Ask, "What is the difference between—

- (a) "Laziness and idleness?
- (b) "Evolution and revolution?
- (c) "Poverty and misery?
- (d) "Character and reputation?"

If answer is ambiguous, get S. to explain. If he merely defines the words, say, "Yes, but I want you to tell me the difference between — and —."

Credit if three of the four answers are given correctly. (See *The Measurement of Intelligence*, pp. 325-26.)

4. Enclosed Boxes

Show S. a small cardboard box, and say, "Listen carefully. You see this box; it has two smaller boxes inside of it, and each one of the smaller boxes contains a little tiny box. How many boxes are there altogether, counting the big one?" Allow one-half minute, record answer, then show second box, saying, "This box has two smaller boxes inside, and each of the smaller boxes contains *two* tiny boxes. How many altogether?" Similarly for (c) and (d), using three and three, and four and four. Emphasize slightly the words "three" and "four."

Credit if three of the four problems are solved correctly within one-half minute each. Spontaneous corrections are counted as correct.

5. Six Digits Backwards

Say "Listen carefully. I am going to read some numbers, and I want you to say them backwards. For example, if I should say 5—1—4, you would say 4—1—5. Do you understand?" Then, "Ready now; listen carefully, and be sure to say the numbers backwards." If S. gives digits forwards repeat instructions. If necessary, give (b) and (c), repeating each time, "Ready now; listen carefully, and be sure to say the numbers backwards." 4, 7, 1, 9, 5, 2; 5, 8, 3, 2, 9, 4; 7, 5, 2, 6, 3, 8.

Credit if one set is repeated backwards without error.

6. Code

Show S. the code given on card XVI⁶. Say, "See these diagrams here? Look and you will see that they contain all the letters of the alphabet. Now, examine the arrangement of the letters. They go (pointing) a b c, d e f, g h i, j k l, m n o, p q r, s t u v, w x y z. You see the letters in the first two diagrams are arranged in the up-and-down order (pointing again), and the letters in the other two dia-

grams run in just the opposite way from the hands of a clock (pointing). Look again and you will see that the second diagram is just like the first, except that each letter has a dot with it, and that the last diagram is like the third except that here, also, each letter has a dot. Now, all of this represents a code; that is, a secret language. It is a real code, one that was used in the Civil War for sending secret messages. This is the way it works: We draw the lines which hold a letter, but leave out the letter. Here, for example, is the way we would write 'spy.' Then write the words "spy" and "trench," pointing out carefully where each letter comes from, and emphasizing the fact that the dot must be used in addition to the lines in writing any letter in the second or fourth diagram. Then add: "I am going to have you write something for me; remember, now, how the letters go, first (pointing, as before) a b c, d e f, g h i, then j k l, m n o, p q r, then s t u v, then w x y z. And don't forget the dots for the letters in this diagram and this one" (pointing). At this point, take away the diagrams, give S. pencil and paper, and tell him to write the words "come quickly." Say nothing about hurrying. Do not permit S. to reproduce the code and then to copy the code letters from his reproduction.

Credit if the words are written within six minutes with not more than two errors, omission of dot counting as half error.

Alt. 1. Repeating Sentences

Say, "Now, listen. I am going to say something and after I am through I want you to say it over just as I do. Understand? Listen carefully and be sure to say exactly what I say." Repeat "Say exactly what I say" before reading each sentence. Do not re-read any sentence.

(a) Walter likes very much to go on visits to his grandmother, because she always tells him many funny stories.

(b) Yesterday I saw a pretty little dog in the street. It had curly brown hair, short legs, and a long tail.

Credit if one sentence is repeated without a single error.

Alt. 2. Comprehension of Physical Relations

(a) Draw a horizontal line 6 or 8 inches long. An inch or two above it draw a horizontal line about an inch long parallel to the first. Say, "The long line represents the perfectly level ground of a field, and the short line represents a cannon. The cannon is pointed horizontally (on a level) and is fired across this perfectly level field." After it is clear that these conditions of the problem are comprehended, add, "Now, suppose that this cannon is fired off and that the ball comes to the ground at this point here (pointing to the farther end of the line which represents the field). Take this pencil and draw a line which will show what path the cannon ball will take from the time it leaves the mouth of the cannon till it strikes the ground."

(b) Say, "You know, of course, that water holds up a fish that is placed in it. Well, here is a problem: Suppose we have a bucket which is partly full of water. We place the bucket on the scales and find that

with the water in it it weighs exactly 45 pounds. Then we put a 5-pound fish into the bucket of water. Now, what will the whole thing weigh?" If S. responds correctly, say, "How can this be correct, since the water itself holds up the fish?"

(c) "You know, do you not, what it means when they say a gun 'carries 100 yards?' It means that the bullet goes 100 yards before it drops to amount to anything." When this is clear, proceed, "Now, suppose a man is shooting at a mark about the size of a quart can. His rifle carries perfectly more than 100 yards. With such a gun is it any harder to hit the mark at 100 yards than it is at 50 yards?"

Credit if two of the three problems are satisfactorily solved.

For (a), line must begin almost on a level and drop more rapidly toward the end.

For (b), S. must adhere positively to right answer.

For (c), S. must know that a small deviation at 50 yards becomes a larger deviation at 100 yards.

(See *The Measurement of Intelligence*, pp. 333-36 for important scoring rules.)

Year XVIII

1. Vocabulary

See page 31.

75 satisfactory definitions if both lists are given; 38 if only one list is given.

2. Paper-Cutting Test

When this test is given it should precede XIV 2.

Take a piece of paper about 6 inches square and say, "Watch carefully what I do. See, I fold the paper this way (folding it once over in the middle). Then I fold it this way (folding it again in the middle, but at right angles to the first fold). Now, I will cut out a notch right here" (indicating). Cut notch, keeping fragments out of view. Leave folded paper exposed, but pressed flat against table. Then give S. a pencil and a second sheet of paper like the one already used and say, "Take this piece of paper and make a drawing to show how the other sheet of paper would look if it were unfolded. Draw lines to show the creases in the paper and show what results from the cutting." Do not permit S. to fold second sheet, and do not say, "draw the holes."

Credit if creases are correctly represented, with correct number of holes correctly located.

3. Repeating Eight Digits

Say, "Now, listen. I am going to say over some numbers and after I am through, I want you to say them exactly as I do. Listen closely and get them just right." Give (a), and if necessary (b) and (c). 7, 2, 5, 3, 4, 8, 9, 6; 4, 9, 8, 5, 3, 7, 6, 2; 8, 3, 7, 9, 5, 4, 8, 2.

Credit if one set is reproduced without error.

4. *Repeating Thought of Passage*

Say, "I am going to read a little selection of about six or eight lines. When I am through I will ask you to repeat as much of it as you can. It does n't make any difference whether you remember the exact words or not, but you must listen carefully so that you can tell me everything it says." Read (a), and if necessary (b), recording response verbatim. Urge S. to give thought of selection in his own words, if he hesitates.

(a) Tests, such as we are now making, are of value both for the advancement of science and for the information of the person who is tested. It is important for science to learn how people differ and on what factors these differences depend. If we can separate the influence of heredity from the influence of environment, we may be able to apply our knowledge so as to guide human development. We may thus in some cases correct defects and develop abilities which we might otherwise neglect.

(b) Many opinions have been given on the value of life. Some call it good, others call it bad. It would be nearer correct to say that it is mediocre; for on the one hand our happiness is never as great as we should like, and on the other hand our misfortunes are never as great as our enemies would wish for us. It is this mediocrity of life which prevents it from being radically unjust.

Credit if main thoughts of one of the selections are given in reasonably consecutive order. (See *The Measurement of Intelligence*, pp. 340-43.)

5. *Seven Digits Backwards*

Say, "Listen carefully, I am going to read some numbers, and I want you to say them backwards. For example, if I should say 5-1-4 you would say 4-1-5. Do you understand?" Then, "Ready now, listen carefully, and be sure to say the numbers backwards." If S. gives the digits forwards, repeat instructions. If necessary, give (b) and (c), repeating each time: "Ready now, listen carefully, and be sure to say the numbers backwards." 4, 1, 6, 2, 5, 9, 3; 3, 8, 2, 6, 4, 7, 5; 9, 4, 5, 2, 8, 3, 7.

Credit if one set is repeated backwards without error.

6. *Ingenuity Test*

State problem (a) orally, repeating it if S. does not respond promptly. Do not allow S. to use pencil or paper, and ask him to give his solution orally as he works it out. Record his statement in full. If S. resorts to some such method as "fill the 3-pint vessel two-thirds full," or "I would mark the inside of the 5-pint vessel so as to show where 4 pints come to," etc., inform him that such a method is not allowable; that this would be guessing, since he could not be sure when the 3-pint vessel was two-thirds full, or whether he had marked off his 5-pint vessel accurately. Tell him he must measure out the water without any guesswork and explain also that it is a fair problem, not a "catch." Say nothing about pouring from one vessel to another, but if S. asks whether this is permissible, say "yes." If S. has not solved (a) correctly within five minutes, explain the solution in full and proceed to (b). State (b) orally and al-

low S. five minutes for its solution. Do not explain in case of failure. If S. succeeds on either (a) or (b), but not with both, give problem (c) orally, allowing five minutes for this also.

(a) "A mother sent her boy to the river and told him to bring back exactly 7 pints of water. She gave him a 3-pint vessel and a 5-pint vessel. Show me how the boy can measure out exactly 7 pints of water, using nothing but these two vessels and not guessing at the amount. You should begin by filling the 5-pint vessel first. Remember, you have a 3-pint vessel and a 5-pint vessel, and you must bring back exactly 7 pints."

Same formula for (b) 5 and 7, get 8. Begin with 5; and (c) 4 and 9, get 7. Begin with 4.

Credit if two of the three problems are solved correctly, each within five minutes.

Vocabulary

I want to find out how many words you know. Listen; and when I say a word, you tell me what it means. What is an orange?" etc. If S. can read, let him see the words on the vocabulary lists. Continue in each list till 6 or 8 successive words have been missed. If S. thinks formal definition is required, say: "Just tell me in your own words; say it any way you please. All I want is to find out whether you know what a — is." May ask S. to explain what he means if it is not clear.

List 1

1. gown
2. tap
3. scorch
4. puddle
5. envelope
6. rule
7. health
8. eye-lash
9. copper
10. curse
11. pork
12. outward
13. southern
14. lecture
15. dungeon
16. skill
17. ramble
18. civil
19. insure
20. nerve
21. juggler
22. regard
23. stave
24. brunette
25. hysterics
26. Mars
27. mosaic
28. bewail
29. priceless
30. disproportionate

List 2

1. orange
2. bonfire
3. straw
4. roar
5. haste
6. afloat
7. guitar
8. mellow
9. impolite
10. plumbing
11. noticeable
12. muzzle
13. quake
14. reception
15. majesty
16. treasury
17. misuse
18. crunch
19. forfeit
20. sportive
21. apish
22. snip
23. shrewd
24. repose
25. peculiarity
26. conscientious
27. charter
28. coinage
29. dilapidated
30. promontory

31. tolerate	31. avarice
32. artless	32. gelatinous
33. depredation	33. drabble
34. lotus	34. philanthropy
35. frustrate	35. irony
36. harpy	36. embody
37. flaunt	37. swaddle
38. ochre	38. exaltation
39. milksop	39. infuse
40. incrustation	40. selectman
41. retroactive	41. declivity
42. ambergris	42. laity
43. achromatic	43. fen
44. perfunctory	44. sapient
45. casuistry	45. cameo
46. piscatorial	46. theosophy
47. sudorific	47. precipitancy
48. parterre	48. paleology
49. shagreen	49. homunculus
50. complot	50. limpet

A definition is satisfactory if it gives one correct meaning for the word, regardless of whether that meaning is the most common one, and however poorly it may be expressed. (See *The Measurement of Intelligence*, pp. 227-28, for illustrations of satisfactory and unsatisfactory responses.)

Time may be saved, with little loss of accuracy, by giving one list only, and in this case list 1 should be used. The standards required for passing are as follows:

	<i>If both lists given</i>	<i>If one list given</i>
VIII	20	10
X	30	15
XII	40	20
XIV	50	25
XVI	65	33
XVIII	75	38

